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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,904	05/06/2002	Victor John Yannacone, Jr.	3305-012184	1012

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EXAMINER	
LAMPRECHT, JOEL	
ART UNIT	PAPER NUMBER
3737	
MAIL DATE	DELIVERY MODE
06/07/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/019,904	YANNACONE, JR. ET AL.	
	Examiner	Art Unit	
	JOEL M. LAMPRECHT	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/12/2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14,16,21 and 25-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 14, 16, 21, 25-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12, 14, 16, 21, and 25-30 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 7,408,156 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the '156 patent disclose substantially the same scope of invention of the instant application, with the only variation being the derivative vs integral nature of the calculation which is mapped.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 10, 12, 14, 16, 21, 25-27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al (US 4,428,382) in view of Liu et al (US 6,023,637). Walsall et al discloses a method and apparatus for IR imaging data frame acquisition over an interval so as to map IR radiation data acquired by the imager over multiple frames to detect abnormalities in the tissue being interrogated. Normalization of temperature ranges (Col 9 Line 5-Col 11 Line 65), acquisition occurs over multiple time intervals with data acquisition occurring during both a static and stressed state (Col 5 Line 40-Col 6 Line 35, Col 6 Line 40-Col 7 Line 35). Data is manipulated to show the change in temperature over a time period (Col 9 Lien 5-Col 10 Line 35) and data points

are used and plotted to show variations in temperature which indicate pathological abnormalities.

Walsall et al do not disclose the use of a mirror, markers, variable acquisition methods based on sensor acquisition, or image construction from image data. Attention is then directed to the secondary reference to Liu et al.

Liu et al. also discloses a method and apparatus for thermal imaging and additionally discloses that the intensity is adjusted to compensate for variance in base levels of intensity of thermal radiation from patient to patient (Col 13, lines 9-12), which would advantageously provide the ability to compare data and images between patients. Liu et al further discloses alternatives available for the sensor, such as a single point infrared sensor or either a linear or two-dimensional array of sensors. The use of an array of sensors provides a reduction in sampling time, as multiple optels are acquired at substantially the same time as opposed to using a single point sensor where radiation is measured sequentially from each optel (Col 10, lines 29-46). A scanner mirror (fig. 11, element 130) is used to focus radiation obtained from the patient to the detection system. The system may produce three-dimensional images (Col 11, line 43) which are normalized to intensity mappings (Fig 14). This system may be used in the detection of tumors, which is an abnormal growth of tissue or a neoplastic disease process. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in light of the teachings of the reference by Liu et al to include simultaneous detection of an array as well as a mirror to allow sampling of portions of the patient not in the field of view of the detector system

without moving the entire detector system to a new field of view, which would both reduce sampling time.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al and in further view of Webber (US 6,081,577). Walsall et al, as discussed above, substantially discloses the invention as claimed, however fails to explicitly disclose the use of a marker on the patient. Webber discloses a three-dimensional imaging system that may be practiced using infrared light (Col 2, line 59). Additionally, Webber discloses the use of fiducial markers which may be held in a fixed position relative to a selected object, such as a patient, or may be directly attached to the object (Col 7, lines 32-35). In order for a fiducial marker to be seen in an image it must have emissivity different than that of the patient. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al in light of the teachings in the reference by Webber to include fiducial markers in order to aid in a variety of image processing techniques well known in the art, such as registration, three-dimensional reconstruction, or determination of location of a tumor.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al as applied to claim 10 above, and further in view of Nelson, et al (US 6216540). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of a grid. Nelson et al also discloses a system and method for thermal imaging of an object and further discloses the use of a grid. Nelson et al teaches that image quality may be improved

through the use of a collimation grid (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al further in light of the teachings of Nelson et al to include a grid to provide improved image quality.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al (US 6,023,637) as applied to claim 25 and in further view of Parker et al (US 5,533,139). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails to disclose logarithmic image acquisition. Parker et al also discloses an imaging system and additionally discloses the use of real time logarithmic image acquisition (Col 3, lines 5-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in light of the teachings of Parker et al in view of Liu et al to include logarithmic image acquisition to reduce overall image storage requirements while still obtaining the most data at the beginning where the largest changes in temperature are occurring.

Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al in view of Liu et al as applied to claim 25 above and in further view of Gordon, et al (US 5,692,510). Walsall et al in view of Liu et al, as discussed above, substantially discloses the invention as claimed, however fails to disclose the use of synchronized acquisition. Gordon et al also discloses a thermal imaging system and further discloses that the end-diastolic images were selected to be stored by the system based on a triggering system synchronized by an ECG R-wave (Col 6, lines 29-34). The stored

frames, therefore, were separated by at least one frame of data that was not stored, such as those images acquired during systole. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Walsall et al in view of Liu et al in light of the teachings of Gordon et al to use synchronized data acquisition to, as Gordon states, reduce motion artifacts.

Response to Arguments

Applicant's arguments filed 3/12/2010 have been fully considered but they are not persuasive. Applicant has first argued against the double patenting rejection. Examiner respectfully disagrees that derivative/integral calculations and the same exact mapping are *entirely different procedures*. Integral versus derivative calculations within a line in an algorithm are interchangeable in that both of these mathematical operations are inverses of each other. For the purpose that Chapters 3 and 5 of John Wiley & Sons, Inc are separate does not preclude them from being exact inverses of each other. Given some function, calculus provides 2 "most basic" operations to select from, those functions being integration and derivation. The fact that **comprising** is mentioned in both sets of claims does not preclude one from deriving and then integrating multiple times or vise-versa.

Regarding the arguments against Walsall et al or Liu et al disclosing “rates of change” in temperature, Walsall et al first discloses that the cooling of the regions of interest is mapped between the frames, and differences between the images are indicators of pathology (of course in this application rate of change = change between 2 frames, Col 12 Line 25-Col 14 Line 45). Liu also discloses first in claims 4-6, that

multiple images from the same patient can be used to determine variation in thermal properties between the images (Col 18 Line 50-Col 19 Line 45). To quote from Liu: In an unsteady state, the **thermal radiation as a function of time** can be used to study the heat transfer and equilibrium establishment in the medium, such as when additional cold or heat sources are introduced near the medium, or when the metabolism is changing, for example, during exercise.

Regarding the argument that variable acquisition speed is not disclosed, in Parker et al, Col 8 Line 55-Col 9 Line 25 discloses that variable timing systems allow for logarithmic acquisition of images over an imaging interval.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on 8:30-5:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JML

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit 3737